Original Manuscript

Importance of Maintaining Net Position in Men's and Women's Professional Padel

Perceptual and Motor Skills
2023, Vol. 0(0) 1–16

DOI: 10.1177/00315125231194026
journals.sagepub.com/home/pms
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Abstract

The objective of this research was to analyze the importance of maintaining the net position in men's and women's professional padel. The data sample was drawn from 2,756 padel rallies (n = 1,434 men's and n = 1,322 women's) in matches played during the 2021 season of the World Padel Tour circuit. The results showed that there was no net exchange in 50.7% of the women's rallies, while in 65.9% of men's rallies, the servers kept the net. Due to their physical advantages, men servers had more opportunities to finish the rally at the net than women servers, giving them more opportunities to win the rally. However, when either men or women receivers finished the rally at the net, they had more opportunities to win the rally. In addition, both men and women tended to end the rallies with a winner when they were in the net zone and with an error when they were at the back of the court. These findings suggest that wins in padel are closely related to time spent at the net.

Keywords

racket sports, paddle tennis, gender, efficacy, performance, game analysis, notational analysis

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Introduction

The body of research that has focused on padel has increased in recent years (García-Giménez et al., 2022) due to the growing popularity of this sport; it is practiced in more than 50 countries, with an increasing number of facilities, sports licenses, sponsors, and professionals involved in play (Courel-Ibáñez et al., 2017; International Padel Federation, 2022; Muñoz et al., 2016). One of the most attractive research topics within this sport has been its performance analysis, since most published manuscripts have addressed this subtopic (García-Giménez et al., 2022). Research to date has tried to determine the performance differences between players at different skill levels (Muñoz, Courel-Ibáñez et al., 2017; Muñoz, Sánchez-Alcaraz et al., 2017; Sánchez-Alcaraz et al., 2016), using a methodology in which winning and losing pairs are compared (Escudero-Tena, Almonacid, et al., 2022; Escudero-Tena, Muñoz, et al., 2022; Escudero-Tena, Sánchez-Alcaraz, et al., 2021; Sánchez-Alcaraz, Courel-Ibáñez et al., 2020). Another approach has been to compare performances in men's and women's padel (Escudero-Tena, Courel-Ibáñez, et al., 2021; Escudero-Tena, Mancha-Triguero, et al., 2022; Lupo et al., 2018).

Professional padel has several circuits (A1 Padel, Premier Padel, World Padel Tour [WPT]), the most important being the WPT, which holds more than 20 tournaments in different countries around the world during each season. Thus, the participants of this circuit have been the object of study in several investigations of player gender differences. These studies revealed that the duration of rallies is longer in women's than in men's padel, as is the number of shots per rally (García-Benítez et al., 2016; Lupo et al., 2018). The participation of men and women engaged in padel play differs and relates to their different positions on the court. Men's participation in backhand play is higher and women's participation in forehand padel play is higher (Fernández de Ossó, 2019). Regarding types of shots, men have been found to make more backhand volleys, flat or topspin smashes, and shots close to the net than women, while women make more lobs, slice smashes, and shots from the middle or the back of the court (Escudero-Tena et al., 2020; Lupo et al., 2018; Sánchez-Alcaraz, Pérez-Puche et al., 2020; Torres-Luque et al., 2015). In addition, women play a higher percentage of unforced errors, while men play a higher percentage of winning shots (Fernández de Ossó, 2019). On the other hand, although men are more effective at serving (Sánchez-Alcaraz, Muñoz et al., 2020), women are more effective on breakpoints (Escudero-Tena, Courel-Ibáñez, et al., 2021).

Investigators have also attempted to identify differences between winning and losing professional padel pairs (Escudero-Tena, Sánchez-Alcaraz, et al., 2021; Ramón- Llín et al., 2019; Sánchez-Alcaraz, Courel-Ibáñez et al., 2020). These studies indicate that winning pairs tend to engage in long-lasting rallies (more than 11 seconds), play no errors in the first 4 seconds of the rally, and are very effective on breakpoints. In addition, they perform more attacking actions in 85% of the rallies, spend more time in net zones, and perform more shots. In contrast, losing pairs tend to lose more long-duration rallies, play fewer attacking actions per rally per game, hit more groundstrokes with or without a wall during the match, and have more slice smashes. Thus, there is a

relationship between earning rallies and occupying areas close to the net (Courel-Ibáñez et al., 2017).

Various studies have focused on differentiating the level of women padel players, and they have found that the lob (performed from the back of the court) is the technical-tactical action most often used to occupy areas close to the net. However, this tactic prolongs the rally to allow game continuity and, therefore, give rise to more exchanges of positions between pairs during the same rally (Escudero-Tena et al., 2020; Muñoz, Courel- Ibáñez et al., 2017; Muñoz, Sánchez-Alcaraz et al., 2017).

After analyzing this scientific literature, we found a few manuscripts related to the benefits of being in the area close to the net and analyzing how to stay in those areas as long as possible (Courel-Ibáñez et al., 2015, 2017). However, possible differences between men and women padel professionals regarding these behaviors have not been analyzed. Therefore, our aim in this study was to analyze the relationship between winning and maintaining the net in both men's and women's professional padel, and to analyze gender differences in this behavior. We formulated a research hypothesis that there would be a higher frequency of net exchanges in women's padel, when compared to men's padel, in which the net region would be the predominant area of play for executing successful winning shots.

Method

Research Design

The design of this research followed empirical methodology, and, more specifically, a descriptive strategy. In addition, this research falls within an observational category, is nomothetic, punctual, and multidimensional (Ato et al., 2013; O'Donoghue, 2009).

Data Sample

Following approval from the Bioethics Committee of the University of Extremadura (reference 157/2022), we obtained a database from records of quarterfinal, semifinal, and final matches in six WPT tournaments during the 2021 season, three Open tournaments and three Master tournaments. Specifically, from these 42 men's matches ($n = 24$ quarter-finals, $n = 12$ semi-finals and $n = 6$ finals) and 30 women's matches ($n = 12$ quarter-finals, $n = 12$ semi-finals and $n = 6$ finals), 2,756 rallies were recorded ($n = 1{,}434$ men's rallies and $n = 1{,}322$ women's rallies).

Study Variables

In conducting this study, we analyzed the following variables, as defined here, based on their categorical nucleus and degree of openness (Anguera & Hernández-Mendo, 2016).

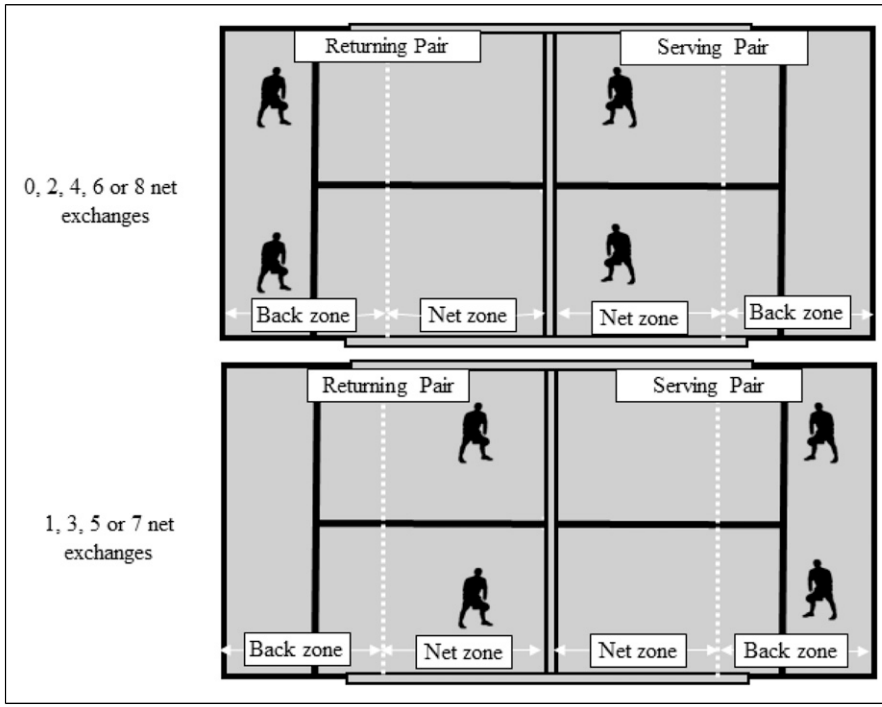

Figure 1. Net Exchanges.

Dependent Variables

- Gender: We noted whether padel players were men or women.

Independent Variables

- Number of Net Exchanges: Number of times the pairs exchange their zone on the court from the net zone to the back zone or vice versa (Figure 1).
- Number of Even or Odd Net Exchanges: Even-numbered exchanges were observed when the serving pair concluded the rally within the net zone, while the returning pair occupied the back zone of the court. Conversely, odd-numbered exchanges transpired when the serving pair terminated the rally in the back zone, while the returning pair occupied the net zone (Figure 1).
- Number of Shots per Rally (whether even or odd): A simple count of the number of shots in a rally, categorized as "Even" when the last shot was made by the receiving pair (e.g., 2, 4, 6, 8, 10…shots per rally) and "odd" when the last shot was made by the serving pair (e.g., 1, 3, 5, 7, 9, 11…shots per rally).
- Efficiency of the Last Shot: We differentiated between winning shots and errors.
- Efficiency of the Pair on Serve: We differentiated between rallies in which the winning pair served and the rallies in which the winning pair returned the serve.

Procedure

The analyzed matches had been streamed and later available to view on the WPT Web site, from where we downloaded them for data observation, collection, and analysis. We used the specialized software LINCE (Gabin et al., 2012) for this process of recording and collecting data, and we designed an *ad-hoc* instrument to analyze the variables under study. The data were analyzed through systematic observation by one of the authors of the study, who is also a doctoral student in sports science and a specialist in padel, with many published scientific investigations related to this topic and with more than five years' experience training padel players s. We performed an intra-observer analysis to ensure the accuracy of the data collected. The observer reanalyzed a sample of 420 rallies (60 matches) to ensure that we had enough relevant data representing 10%–20% of the study sample (Igartua, 2006). The mean intra-observer reliability was .98, considered almost perfect (Landis & Koch, 1977). Likewise, another author of the study, a doctor in sports sciences and a specialist in padel, with many published scientific investigations related to this topic and with more than 15 years' experience training padel players, also analyzed a sample of 420 rallies (60 matches) to calculate the mean inter-observer reliability, which was .91.

Statistical Analysis

We performed a descriptive analysis of these data to obtain information on the number of frequency counts within each categorical variable, and we reported these as frequency numbers and percentages. We conducted inferential tests to make comparisons between data categories to develop Crosstabs Commands, including the *Pearson´s Chi-square* (χ^2) statistical test and *Fisher's* exact test to obtain the association between variables. We also calculated the strength of association between the variables, for which we used *Cramer's V coefficient* (*Vc*) (Field, 2009); a coefficient widely used in sports science studies (González-Espinosa et al., 2017; Mendes et al., 2020; Portillo et al., 2022). Crewson (2006) recommended differentiating the strength of the association, based on the value, and he considered association strengths as follows: small (<.100), low (.100–.299), moderate (.300–.499) or high (>.500). In addition, the Crosstabs Commands made it possible to identify the associations between the categories of the variables through the *corrected standardized residuals* (*CSR*). Residuals > |1.96| revealed boxes with more or fewer cases than there should be (Field, 2009). Finally, we used CHAID (Chi-squared Automatic Interaction Detection), a classification method to generate decision trees with chi-square statistics to identify optimal divisions. We established $p < .05$ as the level of statistical significance, and we performed the statistical analysis with IBM SPSS version 27.0 for Windows (IBM. Corp, Armonk, NY).

Results

The results show that gender is associated with the number of net exchanges (*Fisher's* = 88.118; $p < .001$; *Vc* = .178). Table 1 shows the frequency, percentage, and corrected standardized residuals of the number of net exchanges in women's and men's padel.

In 50.7% of the rallies in women's padel there was no exchange; in contrast, in men's padel 65.9% the servers kept the net. In addition, in women's padel there was a higher percentage of net exchanges, regardless of the number (1, 2, 3, 4, 5, 6, 7 and 8). On the other hand, gender was related to net exchanges when the pair on serve won the rallies (*Fisher's* = 48.431; $p < .001$; *Vc* = .186) and when the returning pair won the rallies (*Fisher's* = 50.417, $p < .001$, *Vc* = .195). Table 2 shows the frequency, percentage, and corrected standardized residuals of the number of net exchanges in men's and women's professional padel depending on whether the pair on the serve or the returning pair won the rallies. We recorded 2,756 rallies (n = 1,434 men's rallies and n = 1,322 women's rallies).

Regardless of whether the rally was won by the serving pair or by the returning pair, the percentage of zero net exchanges in women was lower than in men. On the contrary, net exchanges were more characteristic in women's padel. On the other hand, the results also show that the effectiveness of the serving partner was associated with net exchanges (*Fishe's* = 290.051; $p < .001$; *Vc* = .324). Table 3 shows the number of net exchanges, differentiating the rallies that were won by the pair on serve from the rallies that were won by the returning pair.

When the serving pairs finished the rally at the net, they had many chances to win the rally, especially when there were no exchanges (CSR = 13.3) or two exchanges (CSR = 3.0). However, when the receivers finished the rally at the net, the servers lost most of the rallies. On the other hand, the effectiveness of the pair on serve was associated with net exchanges in men's (*Fisher's* = 168.974; $p < .001$; *Vc* = .343) and women's padel

Table 1. Number of Net Exchanges in Men's and Women's Padel.

	Men			Women		
Number of net exchanges	*n*	%	*CSR*	*n*	%	*CSR*
0	945	65.9	8.1[a]	670	50.7	−8.1
1	319	22.2	−2.6	349	26.4	2.6[a]
2	93	6.5	−4.8	155	11.7	4.8[a]
3	48	3.3	−3.1	77	5.8	3.1[a]
4	21	1.5	−3.1	43	3.3	3.1[a]
5	6	.4	−1.6	12	.9	1.6
6	0	.0	−3.0	8	.6	3.0[a]
7	1	.1	−.6	2	.2	.6
8	1	.1	−2.0	6	.5	2.0[a]

Note. [a]>1.96.

Table 2. Number of Net Exchanges in Men's and Women's Padel Depending on whether the Pair Won the Rallies on Serve or on Return.

	Pair wins serve					
	Men			Women		
Number of net exchanges	*n*	%	*CSR*	*n*	%	*CSR*
0	573	78.1	6.3[a]	423	62.9	−6.3
1	74	10.1	−2.8	101	15.0	2.8[a]
2	60	8.2	−3.0	89	13.2	3.0[a]
3	8	1.1	−2.8	22	3.3	2.8[a]
4	15	2.0	−1.6	22	3.3	1.6
5	2	.3	−1.2	5	.7	1.2
6	0	.0	−2.6	6	.9	2.6[a]
7	1	.1	1.0	0	.0	−1.0
8	1	.1	−1.7	5	.7	1.7
	Pair wins return					
	Men			Women		
Number of net exchanges	*n*	%	*CSR*	*n*	%	*CSR*
0	372	53.1	5.6[a]	247	38.1	−5.6
1	245	35.0	−1.2	248	38.2	1.2
2	33	4.7	−3.8	66	10.2	3.8[a]
3	40	5.7	−2.1	55	8.5	2.1[a]
4	6	.9	−3.1	21	3.2	3.1[a]
5	4	.6	−1.0	7	1.1	1.0
6	0	.0	−1.5	2	.3	1.5
7	0	.0	−1.5	2	.3	1.5
8	0	.0	−1.0	1	.2	1.0

Note. [a] >1.96.

(*Fisher's* = 134.068; $p < .001$; $Vc = .318$). Table 4 shows the number of net exchanges that took place in men's and women's professional padel, depending on whether the rally was won by the serving or returning pair.

When the men and women serving pairs finished the rally at the net, they had many options to win the rally. However, when the receivers finished the rally at the net, they were the ones who had many options to win the rally. In addition, there were normally zero, one or two net exchanges and there were almost never five, six, seven or eight net exchanges during men's professional padel rallies.

Net exchanges were thus associated with the number of shots per rally being odd or even in winners (χ^2 (1) = 151.224; $p < .001$; $Vc = .498$) and errors (χ^2 (1) = 28.926; $p < .001$; $Vc = .187$) for men and in the winners (χ^2 (1) = 163.827; $p < .001$; $Vc = .599$) and

Table 3. Number of Net Exchanges Depending on Whether the Pair Won the Rally on Serve or on Return.

	Winning Serve			Winning Return		
Number of Net Exchanges	*n*	%	*CSR*	*n*	%	*CSR*
0	996	70.8	13.3[a]	619	45.9	−13.3
1	175	12.4	−14.8	493	36.5	14.8[a]
2	149	10.6	3.0[a]	99	7.3	−3.0
3	30	2.1	−6.2	95	7.0	6.2[a]
4	37	2.6	1.1	27	2.0	−1.1
5	7	.5	−1.0	11	.8	1.0
6	6	.4	1.4	2	.1	−1.4
7	1	.1	−.6	2	.1	0.6
8	6	.4	1.8	1	.1	−1.8

Note. [a] >1.96.

errors (χ^2 (1) = 23.341; $p < .001$; $Vc = .164$) for women. Figures 2 and 3 show the winners and errors that occurred in men's and women's padel when the number of shots per rally was even (last shot was made by the returning pair) or odd (last shot was made by the pair on serve) and when the number of net exchanges was even (serving pair finished the rally at the net) or odd (returning pair finished rally at the net).

Our results indicated that when the number of net exchanges was even and the serving partner made the last shot of the rally, this was usually a winner in both men's (*CSR* = 12.3) and women's padel (*CSR* = 12.8). And similarly, when the returning pair finished the rally at the net (odd net exchanges) and made the last shot of the rally, this was usually a winner in both men's (*CSR* = 12.3) and women's (*CSR* = 12.8) padel.

On the contrary, when the number of net exchanges was even and the returning pair made the last shot of the rally, this was usually an error in both men's (*CSR* = 5.4) and women's padel (*CSR* = 4.8). Furthermore, when the number of net exchanges was odd and the serving pair made the last shot of the rally, this was usually an error in both men's (*CSR* = 5.4) and women's padel (*CSR* = 4.8).

Discussion

Our objective in this study was to analyze the relationship between winning and maintaining the net in both men's and women's professional padel, and to analyze gender differences in this behavior. Our results confirmed our research hypothesis. We found that there were usually zero, one or two net exchanges in most men's and women's professional padel rallies and that there were almost never five, six, seven, or eight net exchanges. This may be due to the advantage that the serving pair had during the first shots of the rally and to the fact that the average number of shots per rally and

Table 4. Number of Net Exchanges According to Whether the Pair Won the Rally on Serve or on Return in Men's and Women's Padel.

	Men					
	Pair wins serve			Pair wins return		
Number of net exchanges	*n*	%	*CSR*	*n*	%	*CSR*
0	573	60.6	9.9[a]	372	39.4	−9.9
1	74	23.2	−11.3	245	76.8	11.3[a]
2	60	64.5	2.7[a]	33	35.5	−2.7
3	8	16.7	−4.9	40	83.3	4.9[a]
4	15	71.4	1.9	6	28.6	−1.9
5	2	33.3	−.9	4	66.7	.9
6	0	.0	.0	0	.0	.0
7	1	100.0	1.0	0	.0	−1.0
8	1	100.0	1.0	0	.0	−1.0
	Women					
	Pair wins serve			Pair wins return		
Number of net exchanges	*n*	%	*CSR*	*n*	%	*CSR*
0	423	63.2	9.0[a]	247	36.8	−9.0
1	101	28.9	−9.6	248	71.1	9.6[a]
2	89	57.4	1.7	66	42.6	−1.7
3	22	28.2	−4.1	55	71.8	4.1[a]
4	22	52.3	.2	21	47.7	−.2
5	5	41.7	−.6	7	58.3	.6
6	6	75.0	1.4	2	25.0	−1.4
7	0	.0	−1.4	2	100.0	1.4
8	5	83.3	1.6	1	16.7	−1.6

Note. [a] >1.96.

their duration was not very high (García-Benítez et al., 2016; Sánchez-Alcaraz et al., 2020; Torres-Luque et al., 2015). Therefore, carrying out a technical-tactical action from the back of the court to get to the net zone and in turn take this zone away from the rival pair seems very complex. Of note, since women engaged in more net exchanges, this tactic may be easier for women to accomplish than men. Players are well advised to train for this game situation, as both men and women earned more rallies when they finished rallies at the net. Thus, while the serving men and women pairs usually won the rally when the number of net exchanges was even, the returning pairs usually won the rally when the number was odd. Our results coincide with those presented in various previous studies that found a relationship between earning rallies and occupying areas

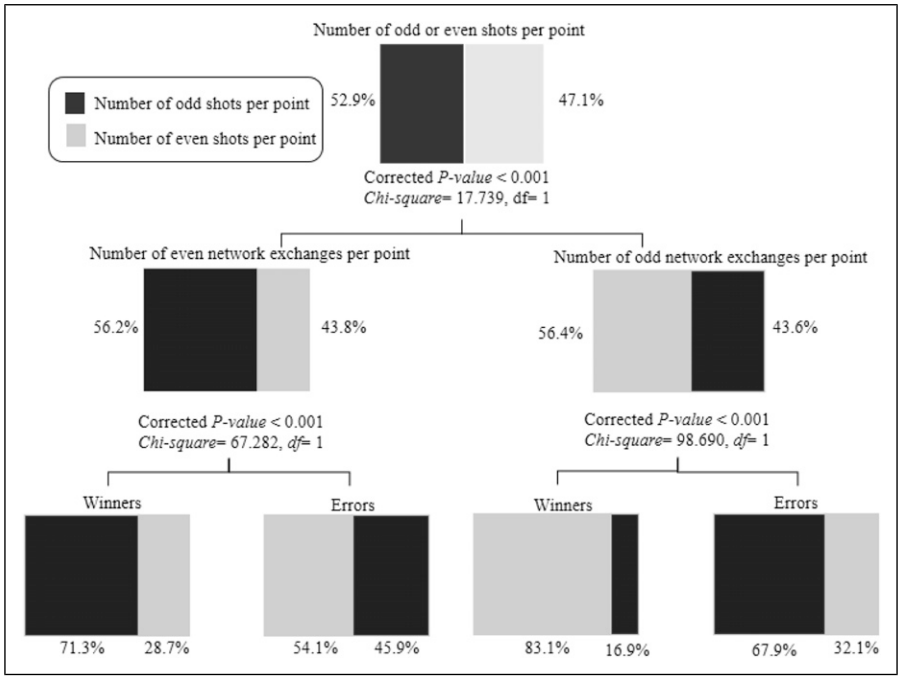

Figure 2. Classification Tree: Analysis of Winners and Errors According to Shots Per Rally and Net Exchanges in Men's Padel.

close to the net (Courel-Ibáñez et al., 2015; Ramón-Llín et al., 2020; Sánchez-Alcaraz, Courel-Ibáñez et al., 2020). This seems to happen because the objective of the pair of players that is in the back zone was to fight to get the net position and the objective of the players that are in the net zone was to fight to keep it (Courel-Ibáñez et al., 2017). Therefore, padel players must practice all kinds of technical-tactical strategies to get and keep the net position. Getting and maintaining the net position was related to earning rallies in professional padel.

Regardless of the player's gender, both the serving pair and the returning pair finished the rallies with a winner if they ended up at the net. On the contrary, the padel players finished the rallies with an error if they were in the back area of the court. In this sense, Sánchez-Alcaraz, Pérez-Puche et al. (2020) indicated that the effectiveness of smashes decreased significantly when players moved away from the net and several investigations concluded that winning pairs performed a greater number of winning smashes than losing pairs, this technical-tactical action being the most often used to get direct rallies (Escudero-Tena, Sánchez-Alcaraz, et al., 2021; Ramón-Llín et al., 2020; Sánchez-Alcaraz, Courel-Ibáñez et al., 2020). In addition, Ramón-Llín et al. (2020) analyzed the final shots and the differences between winners and losers and found that the players who lost made a higher percentage of shots off the wall. Thus, the back area

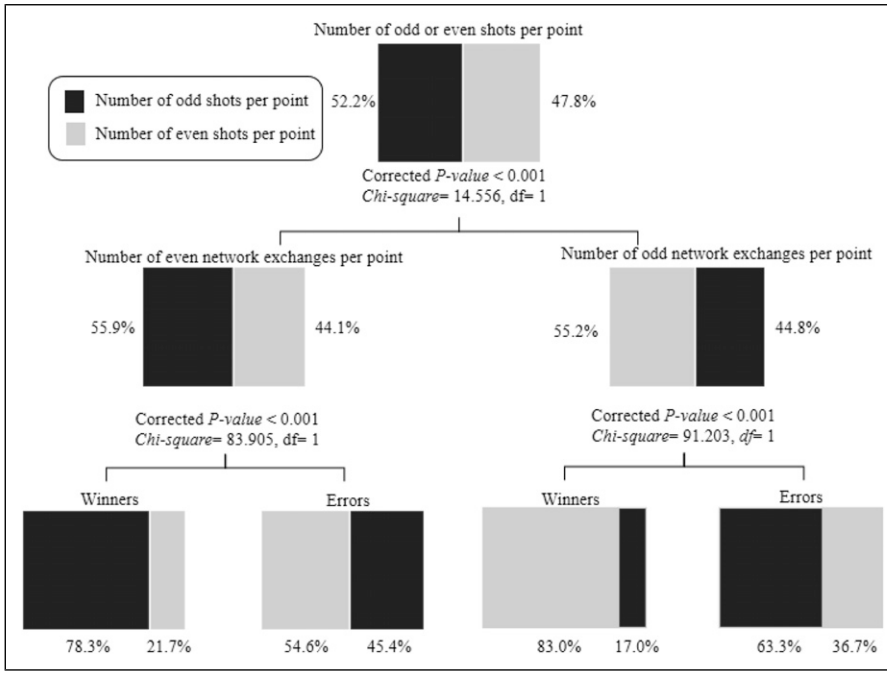

Figure 3. Classification Tree: Analysis of Winners and Errors According to Shots Per Rally and Net Exchanges in Women's Padel.

of the court can be regarded as an unfavorable area, in which mistakes are frequent and which the players must leave as soon as possible. By contrast, the net area is a favorable area, in which winning shots occur and in which the players must try to spend as much time as possible during the matches. This means that the pair of players, both in the men's and women's professional category, who manage to spend more time in the net zone will have a good chance of winning.

One of our main aims in this research was to analyze the difference between men's and women's padel according to net exchanges. Our results show that in men's padel the servers kept the net throughout the rally more often than in women's padel (0 net exchanges). By contrast, during the rallies in women's padel there were more exchanges of pairs at the net than in men's padel, regardless of the number and whether the rally was won by the pair on serve or the returning pair. Although there are several studies whose objectives was to study the best way to achieve the net and the benefits thereby achieved (Courel-Ibáñez et al., 2017; Escudero-Tena et al., 2020; Muñoz, Courel-Ibáñez et al., 2017; Muñoz, Sánchez-Alcaraz et al., 2017), to the best of our knowledge, ours was the first research to compare net exchanges between men and women. Since others noted the longer duration of the points and the greater number of shots in women's professional padel (García-Benítez et al., 2016), our obtained results

seem logical and can be attributed to the differences between the characteristics of men's and women's professional padel games (Escudero-Tena, Courel-Ibáñez, et al., 2021; García-Benítez et al., 2016; Lupo et al., 2018) and to anthropometric differences between men and women padel players (Muñoz et al., 2022; Pradas et al., 2019, 2021). Women perform more lobs than men (García-Benítez et al., 2016; Torres-Luque et al., 2015), with the lob being the most frequently used technical-tactical action from the end zone of the court to achieve the net zone. But lobs do not finish the rally in the exchange, and they yield more position exchanges between pairs during the same rally (Escudero-Tena et al., 2020; Muñoz, Courel-Ibáñez et al., 2017; Muñoz, Sánchez-Alcaraz et al., 2017). In addition, men are taller than women (Muñoz et al., 2022), have a higher percentage of muscle mass and more explosive strength (Pradas et al., 2021). These qualities allow them to take a better shot against a deep lob so as not to lose the net zone. For these reasons, gender must be considered by padel coaches in their efforts to carry out specific training tasks designed to achieve and maintain the play close to the net. In addition, while the physical preparation of professional men padel players should focus more on explosive strength, power and striking speed, the physical preparation of professional women padel players should be a greater emphasis on endurance.

Limitations and Directions for Further Research

Our study has several limitations that must be considered when interpreting the results and when planning future research. First, the difference in the score between the pairs during the game and the set may be a factor we did not consider that could affect our results, since the behavior of the players, both at the back of the court and at the net, could vary with an even or unequal score, and even at decisive moments such as breakpoints. Second, it is possible that the sample we analyzed (six tournaments) and the characteristics of the places where they were playing (contextual parameters such as altitude, humidity, outdoor, indoor, etc.,) were specific, unexplored contextual variables that require further research to best understand their role in explaining our findings.

Conclusion

In most men's and women's professional padel rallies, serving pairs do not usually lose the net positioning. Although there is sometimes a net exchange between the pairs and, on fewer occasions, two, three, or four exchanges, there are almost never more than four net exchanges. Regardless of whether the rallies were won by the pair serving or by the returning pair, and regardless of the number of rallies, during women's padel rallies there were more net exchanges than during men's padel rallies whatever the number. In addition, when comparing men's and women's padel rallies, men's rallies were more often characterized by no net exchange. Whichever team ended the rally at the net zone was usually the one who won the most points, whether serving or receiving. Both men and women tended to end the rallies with a winner when they were in the net zone and with an error when they were in the back zone of the court.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

Following approval from the Bioethics Committee of the University of Extremadura (reference 157/2022).

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